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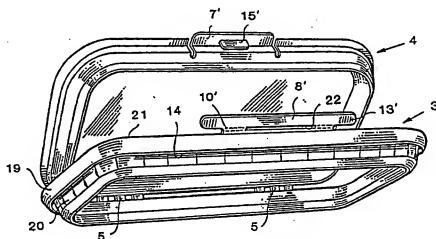
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(54) Title: TAMPERPROOF RECLOSING LID



(57) Abstract

A tamperproof-protected reclosing device, comprising a cover frame (3) having a downwardly turned U-shaped groove (14), into which a planar cut upper or lower edge of a container (1) is designed to be pushed and fastened, as well as a cover element (4), connected to the frame (3) by means of hinges and designed to be pushed into and releasably secured in the interior of the cover frame (3), the cover (4), when the container is sealed, being pushed into the cover frame (3) and the tamperproof-protecting device being designed as a projecting appendage (8') of the cover frame (3) or the cover (4) and forming a tear tab (8; 8'), attached by means of a tear weakening (10') and which, when the reclosing device is not broken, locks the cover and the cover frame against each other, and this projecting appendage (8'), when the container is sealed, being folded and sealed in such a way, that the cover (3) cannot be opened up, provided said appendage (6; 8') is not torn off from the cover frame (3) and the cover (4).

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TAMPERPROOF RECLOSING LID

5 The present invention relates to a tamperproof reclosing device, designed for portioning-out containers and which comprises two closing elements, connected to each other, namely a cover frame having a groove, into which a plane cut upper edge of a container will be pushed and fastened by means of a weld joint, a glue, a wax or the like, and a cover element, connected to said frame element by means of hinges and able to be snapped in and releasably secured in the interior of said cover frame, preferably in such a way that the reclosable container will be powder and vapor tight.

10 The invention particularly relates to a reclosing device of this type, which is transport protected in a tamperproof way, the reclosing cover element being designed in such a way that it is possible to directly and quickly see whether the container having such a reclosing cover has been unduly opened up.

15 Many different types of such tamperproof or transport protected reclosing devices are known. The majority of the known constructions are based on the concept, that the cover frame and the reclosing cover, when the container has not yet been broken open, are to be connected in such a way, that some part of the frame or the cover must be broken or smashed in order to open up the reclosing cover, or that some part of the cover must be cut or torn in order to gain access to the product in the container.

20 Thus, US patent No. 3,966,080 describes a reclosing device, in which the cover frame and the reclosing cover are molded together in such a way, that the cover is connected to the frame along the hinged portion as well as along the opening edge of the cover, and the container is opened up by prying open or pressing down the cover in such a strong way, that the joint between the opening edge of the cover and the frame will be broken. Such a device is difficult and expensive to manufacture and often a relatively large force is required to open up the container by breaking the joint between the cover and the cover frame.

25 30 European patent No. 72,294 shows a reclosing device, which can

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be manufactured in a comparatively simple way by molding a plastic material, the cover element and the frame element being turned up in one single plane and the frame, in order to provide a tamperproof protection, being designed with projecting pins and the cover element with corresponding holes, and the reclosing cover, before putting on the cover on a container, being turned down above the frame in order to let the pins in the frame project upwards through said holes in the cover, subsequent to which the projecting parts of the frame pins are reshaped by means of heat in order to make them wider and able to lock the cover element against the frame element. The container can subsequently be opened up by breaking the pins or cutting them. The breaking of the widened parts of the pins can also create difficulties, and the locking of the cover against the frame requires an additional working moment, since the pins are to be shaped by heating.

Applicant's US Patent no. 4,883,193 relates to a way of applying a tamperproof protection by instead providing the cover element with a barbed pin, which can be freely introduced downwards through a hole in the frame, but which, when the cover and the frame are connected, is locked against the frame not until a container is pushed into the groove of the frame, since the material itself of the container presses the barb on the pin against an edge of the frame and in this way prevents the cover from being separated from the frame. This reclosing device can also be manufactured in a simple way having a cover and a frame turned up in one single plane, but also as to this type of container a certain amount of work is required in order to break loose the downwardly projecting pin and in this way fold the cover upwards from the frame and open up the container.

The object of the present invention is to suggest a tamperproof-protected reclosing device of the above-mentioned type, - in which the cover and the frame can be manufactured by an undivided molding or pressing process, the cover and the frame being turned up in one plane;

- in which the cover and the frame are being locked against each other not until the reclosing device is applied on the upper edge of a container; and
- in which the opening device is designed with a type of tear tab in the same way as is used in many other cases of opening devices for containers.

The concept of utilizing the container itself in order to secure the cover against the frame is used also in the present patent application, but in a new way.

- 10 In a first embodiment of the invention the lock is, at a certain location, preferably along an edge opposite to the hinged edge, provided with a dual projecting tongue, which comprises a tearing element and a locking element, which are mutually connected but can be easily torn apart and also connected to the cover, and
- 15 in which the tongue is folded down-wards-below-behind the outer edge of the cover frame and is secured in the groove of the cover frame by means of the edge of a container, which is pushed into and fastened in the cover groove.

- 20 In an alternative embodiment of the invention the tamperproof protection is designed as an appendage of the frame and forms a tear tab, which is folded upwards-inwards above the upper edge of the reclosing cover and is fastened against the cover in such a way, that the cover cannot be opened from the frame, until the tear tab or some part of it has been torn off.

- 25 The fastening of the tear tab against the cover can be done by providing either the cover edge or the frame with some form of upwardly or outwardly projecting cover part, e.g. a pin in the frame or an actuation part in the cover, and by providing the tear tab with a corresponding recess. When a container is sealed, the
- 30 cover and the frame are connected to each other, the upwardly or outwardly projecting part of the cover or the frame projecting upwardly through said recess in the tear tab, and the tear tab is secured against the frame edge, e.g. by means of a weld joint or by heat-upsetting the upwardly projecting part.

- 35 The container can be opened up only if the tamperproof

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protection is removed, i.e. if the tear tab is torn off from the cover edge and is lifted away from the upwardly projecting cover edge.

5 The present invention will now be described in more detail as follows, reference being made to the accompanying drawings, which show a few alternative embodiments of the invention.

In the drawings Fig. 1 is a perspective view of a container, provided with a reclosing device according to a first embodiment of the invention. Fig. 2 shows a reclosing device according to the invention, viewed in its molding or pressing position, the reclosing cover and the cover frame being positioned in the same plane and the reclosing cover viewed from above and the cover frame viewed from below, and the cover frame being shown only fragmentarily. Fig. 3 shows the reclosing device in Fig. 2 viewed from above, the cover and the cover frame assembled. Fig. 4 shows a vertical cross-section through a reclosing cover in a device according to the invention, viewed along line IV-IV in Fig. 2, and Fig. 5 shows in the same way the device according to the invention in a phase of the assemblage of the reclosing device and a container and viewed along line V-V in Fig. 3. Fig. 6 shows in the same way as in Fig. 5 a cross-section through a finished and closed container. Fig. 7 shows a reclosing device according to a second embodiment of the invention, viewed in perspective obliquely from below in a manufacturing phase immediately before the locking of the tamperproof-protection. Fig. 8 shows the same device, viewed from above, subsequent to finishing the tamperproof-protection. Fig. 9 shows in the same way as Fig. 6 a vertical cross-section through a container, provided with a reclosing device, but for the sake of clarity the tamperproof-protection is shown in its non-locked condition. Fig. 10 shows in the same way the finished container with the applied tamperproof protection. Figs. 11 and 12 show two alternative embodiments of the reclosing device in such a planar turned-up position, in which the device is produced, the frame element being viewed from above and the frame lock element viewed from below. Fig. 13 shows in perspective obliquely from

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above an additional alternative embodiment of the invention, and fig. 14 shows also an alternative embodiment of the device viewed from above.

5 The container shown in Fig. 1 comprises in a known way a container 1 having a planar cut top, which is closed by means of reclosing device 2 comprising a cover frame 3 having a downwardly extended groove on all sides, into which the upper edge of container 1 is inserted and fastened by means of a glue, a wax, a hot-melt or the like, and a reclosing cover 4, which is attached to
10 cover frame 3 via hinged edge 5 and which is pushed downwards into the interior of cover frame 3, preferably in such a way that a powder or vapor tight reclosing of the container is obtained. A portion of a dual projecting tongue 6 is shown at the opening edge of the cover, which tongue is used as a tamperproof means of the device according to the invention and where the shown portion must
15 be torn off in order to open up the cover from the cover frame. Also, cover 4 is provided in a known way with a projecting lug 7, designed to facilitate the pushing of cover 4 from frame 3 upwards.

It is clearly shown in Fig. 2, that the tamperproof means
20 comprises a dual projecting tongue 6, comprising partly a tear tab 8, which is attached to opening edge 9 of cover 4 but can be easily torn off, via a first weakened hinge 10, and partly a lock flap 11, which is attached to tear tab 8 but can be easily torn off, via a second weakened hinge 12. Tear tab 8 has a width, which is the same
25 as or is slightly larger than the height of the exterior side of lock frame 3 and in this way lock flap 11 can be folded inwards, below and behind the exterior side of frame 3, and lock flap 11 preferably will have a width, which is somewhat smaller than the depth of the groove of the cover frame in order to, after a folding
30 into the groove of the frame, retain it by tension action in the way shown in Fig. 5. The tear tab suitably is designed with an e.g. grooved, enlarged gripping part 3 at each end in order to facilitate the tearing off of the tear tab from cover edge 9 and lock flap 11. It is to be pointed out, that weakened hinges 10 and
35 12 can be made "very" weak, since the only main purpose of tearing

off-device 6 is to constitute an indication means showing that the container has not been opened up, and since the cover normally is retained in the cover frame through a friction and/or snap-in action.

5 The cover suitably is molded or pressed in a planar spread-out position, as is shown in Fig. 2, where frame element 3 is shown from below, frame groove 14 designed to connect container 1 being exposed upwardly, and where cover element 4 is shown from above. As is shown in the sections in Figs. 4 and 5 cover 4 can be provided
10 with a forwardly projecting hook 15, designed to, when the cover is closed, mesh with a snap-in action in a corresponding groove 16 in cover frame 3, and also it is shown that cover frame 3 in a known way can be designed with a tightening lip 17 to be sealingly attached to a downwardly projecting part 18 of the cover.

15 Subsequent to the molding or pressing of the reclosing device cover 4 is folded along hinged edge 5 and is pressed downwards into cover frame 3, and then tear tab 8 is folded downwards towards exterior side 19 of frame 3 and lock flap 11 is folded into groove 14 of the frame between exterior side 19 and interior side 20 of
20 the groove and in this way it will be retained in groove 14 bearing on interior side 20, when container 1 has been pushed into groove 14.

25 In connection with a filling and a closing of container 1 reclosing device 2 with its frame will be pushed downwards against the planar cut edge of container 1, as shown in Fig. 5, and this edge will be fastened in frame groove 14 by means of a glue, a wax, a hot-melt or the like, which is shown in Fig. 6. Lock flap 11 is pressed, when container 1 is inserted into frame groove 20 against
30 exterior side 19 of the frame and is simultaneously fastened by means of the glue or the like. Lock flap 11, now securely fastened by container 1, will not allow a release of the tamperproof means without tearing off tear tab 8.

35 When the container is to be opened up, one of the two gripping parts 13 is gripped and tear tab 8 is torn loose, partly from cover edge 9, along a weakened hinge 10, and partly also from lock flap

11, along weakened hinge 12. Lock flap 11 is left in frame groove 20.

The cover can now be opened up and then be reclosed in the usual way. The absence of tear tab 8 of a container clearly indicates, that the container has been manipulated or opened up.

The reclosing device shown in Figs. 7 and 8 also comprises a continuous unit of one frame element 3 and one cover element 4, in which unit cover element 4 is pivotally connected to frame element 3 via one or several hinges 5, and in which the cover meshes with the interior of the cover frame. Frame element 2 is in a known way provided with a frame groove 14, which is formed by an exterior wall 19 and an interior wall 20 of frame 3 as well as a bottom, which simultaneously forms upper edge 21 of the frame. The exterior and the interior walls as well as the bottom jointly form downwardly turned, U-shaped frame groove 14, into which a planar cut upper edge (or lower edge) of a container can be inserted and fastened by means of a glue, a wax, a hot-melt or the like jointing or sealing means.

Cover element 4 is in the device according to Figs. 7 and 8 provided with a projecting gripping tongue 7' in order to make it easier to push the cover upwards out of the frame and with a snapping hook 15', designed to releasably lock the cover in the frame.

In order to design a tamperproof lock device between the cover and the cover frame, frame 3 is provided with a tear tab 8', which projects as an appendage of the frame and is integrally attached to the frame via weakening areas 10' and which has freely suspended, laterally projecting gripping lugs 13'. The tear tab is in this case designed as a projecting element, from an area at or close to the upper edge of frame 3, and it is designed with a centrally disposed slit 22, which as to shape, location and size is in accordance with gripping tongue 7' of the cover element. Tear tab 8' is designed to, when the reclosing device is finished and preferably before the insertion and the fastening of the container can in frame groove 14, form a tamperproof lock device by folding it upwards-inwards above folded cover 4 in order to let gripping

tongue 7' of the cover extend upwards or out through slit 22, and by fastening tear tab 8' against upper edge 23 of cover element 4 in a known way, e.g. by fastening portions of gripping lugs 13' against the cover by means of one or several easily breakable welding points 24, as is illustrated in Fig. 8.

5 The reclosing device can subsequently not be opened up without removing tear tab 8, and this is done by gripping either one of gripping lugs 13' and tearing off tear tab 8' along the weakenings 10'. Subsequently the container can be opened up and be reclosed by means of cover 4.

10 Figs. 9 and 10 show a device, in which cover 4' extends downwards outside frame element 3 and in which the frame element has been designed with one or several upwardly projecting pins 25 and the cover has been designed with corresponding holes. Thus, the pin or the pins project upwards a small distance above the folded
15 cover. In this case the tamperproof lock device has been designed as a lock device 26, outgoing from the lower edge of outer wall 19 of the frame, and it is in the shown case provided with three weakening notches 27a, 27b and 27c, along which the lock device is
20 folded upwards outside downwardly projecting edge 28 of cover 4' and upwards above upper edge 29 of the cover. Weakening notch 27b can in this case suitably be designed as a tearing weakening, along which the tear tab is torn off from the edge frame. Lock device 26 is also provided with a hole 30, through which pin 25 projects
25 upwards, and the locking of the cover against the frame is in this case done by upsetting pins 25 or welding them together with that exterior portion of the lock device, which forms a tear tab 8'.

Fig. 11 shows a reclosing device, which is similar to the one shown in Fig. 1, but in this case the frame is provided with two
30 pins (not shown in the figure) and tear tab 31 is disposed along the upper edge of the frame and has two corresponding holes 32, designed to interact with the pins and to lock the cover in its folded-down position, e.g. through a heat-upsetting of the pins.

Fig. 12 shows a device, in which two tear tabs 33 are used,
35 having each one two holes 34, each one designed to interact with

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REFERENCE NUMERALS

Figures 1-6

1	Container
2	Reclosing device
3	Cover frame
4	Cover element
5	Hinged edge
6	Tongue
7	Lug
8	Tear tab
9	Opening edge
10	Weakened hinge
11	Lock flap
12	Weakened hinge
13	Gripping part
14	Frame groove
15	Projecting hook (in 4)
16	Groove (in 3)
17	Tightening lip
18	Downwardly projecting part(4)
19	Exterior side (of 14)
20	Interior side (of 14)

Figures 7-14

21	Upper edge
22	Slits
23	Upper edge
24	Welding points
25	Pins
26	Lock device
27	Weakening notches
28	Edge
29	Upper edge
30	Hole
31	Tear tab
32	Hole
33	Tear tab
34	Pins
35	Tear tab
36	Pins
37	Tear tab
38	Pins

2. A reclosing device according to claim 1, characterized in that the projecting tamperproof-protection-part comprises a dual projecting tongue (6), preferably disposed along an edge (9) opposite the hinged edge (5) and comprising a tear portion (8) and a lock portion (11), which are mutually connected and connected to the cover (through 10, 12) but can be easily torn apart, and the tongue being folded downwards-behind-below the exterior edge (19) of the cover frame and secured in the groove (14) of the cover frame by means of the edge of a container (1), which is pushed into and fastened in the frame groove (figs. 1-6).

3. A reclosing device according to claim 2, characterized in that the tear part of the tamperproof-protection (6) forms a tear tab (8), which bears on the exterior side of the cover frame (19) and which is designed to be easily torn off, while

leaving a lock part designed as a lock flap (11), in the lock groove (14) of the cover frame (3), and which with a freely suspended, preferably grooved or in a similar manner designed gripping part (13) projects outwards in the two directions.

- 5 4. A reclosing device according to claim 3, characterized in that the lock flap (11) of the tamperproof-protection (6) has a width, which, combined with the thickness of the container, is slightly larger than the width of the groove (14) of the frame (3), in such a way that it, after a folding into the
- 10 frame groove (14), will be retained in it, with a tension action jointly with that edge of the container (1), which has been pushed in.

- 5 A device according to claim 1, characterized in that the cover edge (14) is provided with an upwardly or
- 15 outwardly projecting part, e.g. an actuation tongue (7'), and in that the tear tab (8') is connected to the upper edge of the cover frame (3) and is provided with a slit (22), which as to size and shape corresponds to the projecting actuation tongue (7') of the cover (4), and through which the actuation tongue (7') projects
- 20 outwards (Fig. 7).

6. A device according to claim 5, characterized in that said tear tab (8') is fastened against said frame edge (14) by means of one or several welding points (24) (Fig. 8).

7. A device according to claim 5, characterized in that said cover frame (3) is provided with one or several
- 25 upwardly projecting pins (25), in that said cover edge (29) and said tear tab (8') are provided with corresponding through holes (30), and in that the pin or pins (25), when the container has been sealed, extend(s) upwards through the holes in the cover edge (29)
- 30 and in the tear tab (8') and are upset by heat treatment or welded onto the upper side of the upwardly-inwardly, above the upper edge (29) of the cover, bent tear tab (8'), (Figs. 9-14).

8. A device according to claim 5, characterized in that it is provided with two or more separate tear tabs
- 35 (33;35;37). (Figs. 12-14)

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9. A device according to claim 8, characterized in that it is provided with one tamperproof-protecting tear tab (35;37) along each one of two of its corners or along each one of all of its four corners, the reclosing device being essentially square-shaped.

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10. A device according to claim 8, characterized in that it is provided with two or more tamperproof-protecting tear tabs, evenly distributed around the periphery of the reclosing device, which has a circular, oval, elliptic etc. shape.

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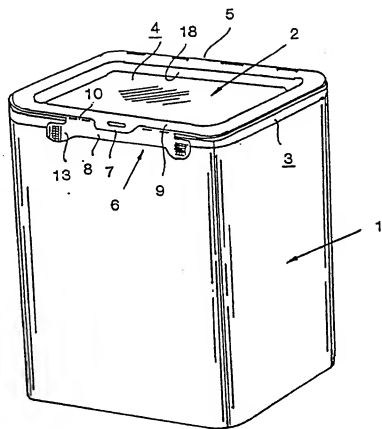


Fig. 1



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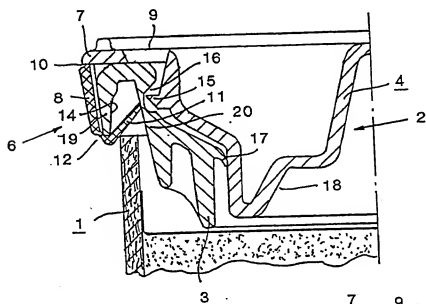
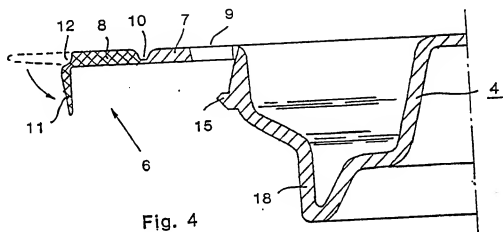


Fig. 6

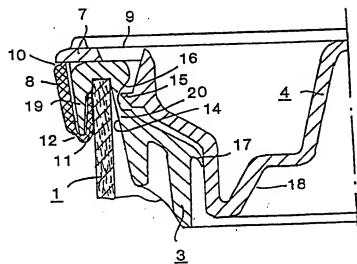


Fig. 8

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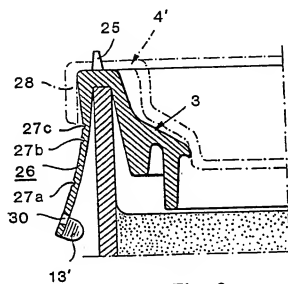


Fig. 9

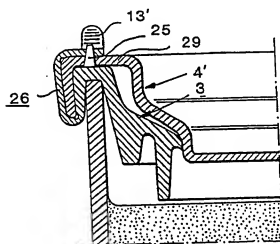


Fig. 10

Fig. 11

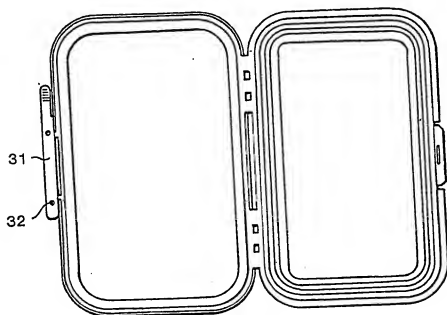
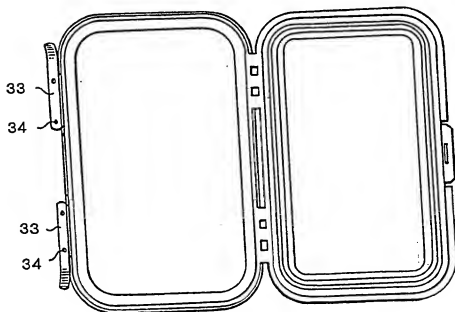


Fig. 12



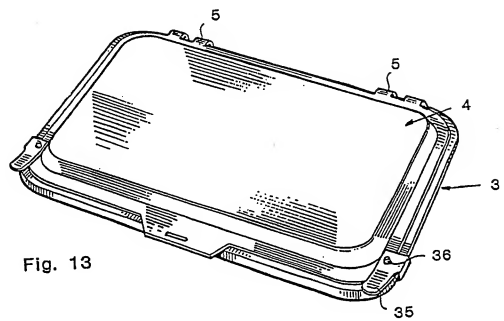


Fig. 13

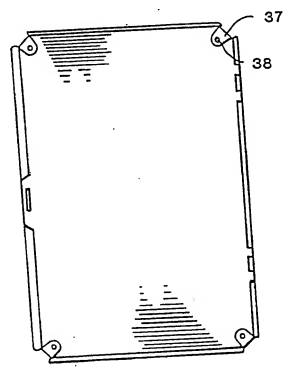


Fig. 14

INTERNATIONAL SEARCH REPORT

International Application No. PCT/SE 90/00271

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)⁵According to International Patent Classification (IPC) or to both National Classification and IPC
IPC5: B 65 D 55/02

II. FIELDS SEARCHED

Minimum Documentation Searched⁷

Classification Symbols

Classification System

IPC5

B 65 D

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in Fields Searched⁸

SE, DK, FI, NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	EP, A2, 0280488 (PEERLESS PLASTICS PACKAGING LIMITED) 31 August 1988, see abstract; figure 2 ---	1
A	EP, A1, 0324573 (DANSK BAKELIT INDUSTRI A/S) 19 July 1989, see abstract; figure 3 ---	1
A	EP, A2, 0289111 (POLYTOP CORPORATION) 2 November 1988, see abstract; figure 2 -----	1

⁹ Special categories of cited documents:¹⁰

- A- document defining the general state of the art which is not considered to be of particular relevance
- E- earlier document but published on or after the international filing date
- L- document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- O- document referring to an oral disclosure, use, exhibition or other means
- P- document published prior to the international filing date but later than the priority date claimed

¹¹ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention¹² document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step¹³ document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art¹⁴ document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search

12th July 1990

International Searching Authority

SWEDISH PATENT OFFICE

Date of Mailing of this International Search Report

1990 -08- 24

Signature of Authorized Officer

Rune Kirsten

ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 90/00271

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file on 90-07-04.
The Swedish Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A2- 0280488	88-08-31	GB-A-	2202514	88-09-28
		US-A-	4819824	89-04-11
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		US-A-	4759455	88-07-26